



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,606	10/30/2001	Takashi Kaku	FUJI 19.088	4151
26304	7590	04/05/2006	EXAMINER	
KATTEN MUCHIN ROSENMAN LLP			LU, JIA	
575 MADISON AVENUE			ART UNIT	
NEW YORK, NY 10022-2585			PAPER NUMBER	
			2611	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/024,606

Applicant(s)

KAKU ET AL.

Examiner

Jia W. Lu

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed on 12/22/06 have been fully considered but they are not persuasive.

Applicant claims that referenced cited do not disclose "extracting, on the basis of a signal sent from a send side, reference information on fluctuation of transmission line characteristics which fluctuate periodically according to an on-off state of a switching element."

Reference '703 discloses switching equalization characteristics according to reference information extracted based on transmission line conditions (column 4, line 30- column 5, line 40), and while these line conditions refer to the transmission line lengths, JP '252 discloses the fluctuations due to on-off switching as a line condition that could be mitigated. See action below.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 2, 5, 6, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,708,703, in view of JP 58073252 A.

a. Regarding claims 1 and 5, patent '703 discloses a system with equalization processing that comprises the steps of extracting information on the length of the transmission line (a line characteristics, see fig 3, element 200) of the received signal and performing equalization processing while switching equalization characteristics (fig 3, elements 302 and 304). However, patent '703 does not meet the following limitation:

“..according to an **on-off state of a switching element** in an apparatus that is connected to the transmission line;”

While patent '703 does not teach the equalization processing of this specific characteristic of the transmission line, patent '252 teaches that the fluctuation in transmission due to on-off switching is an undesirable transmission characteristic which effect should be mitigated. Because patent '703 treats the line length (figure 3, element 200) as a characteristic that results in varying transmission line characteristics, it mitigates its effect using an equalizer system. Therefore, it would have been obvious to one ordinarily skilled in the art to use this equalization system to treat other fluctuations in transmission characteristics, such as one caused by on-off-switching, in order to reduce complexity of the system resulting from varying transmission characteristics.

b. Regarding claims 2 and 6, Patent '703 discloses the use of a reference voltage (column 5, lines 30-40) that is a function of the line condition, and

the detection of change point of transmission line characteristics by using fluctuation of amplitude of reference voltage (column 5, lines 49-64).

- c. Regarding claim 9, Patent '703 discloses a system comprising equalization processing parts each corresponding to different transmitted signal characteristics (fig. 3, elements 302 and 304), and a part switching equalization processing parts in accordance with changes in transmission line (fig 2, element 214).
  - d. Regarding claim 10, Patent '703 discloses a part holding equalization processing parameters for different transmission line characteristics (fig 3, element 105), and a part setting equalization parameters corresponding to specific transmission line characteristics (fig 2, element 214).
2. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,708,703 as applied to claims 1 and 5 above, further in view of US patents 5,424,849 and 4,334,312. Patent '703 discloses the method of equalization, but it fails to address the steps of vectorization and adjusting incoming phases with respect to a reference phase. Patent '849 describes a system comprising signal synchronization (column 7, lines 61-68) which involves the step of extracting a basic frequency signal from sent signal, incoming signal phase adjustment with respect to control (reference) phase (column 10, lines 25-30), and a switching signal output based on the control phase (column 12, lines 27-36). Patent '312 describes a phase synchronizing circuit that uses signal vectors in signal synchronization (column 1, lines 40-47). One ordinarily skilled in

the art would combine the use of vector analysis in phase comparison and equalization for ease of handling, manipulation and calculations signals.

3. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patents 5,708,703, 5,424,849 and 4,334,312 as applied to claim 3 and 7 above, further in view of US patent 6,438,185. In patent '185, Mikko Huttunen discloses an equalization method that includes equalization processing for each period of received signal having fluctuations resulting from transmission, and updating of a reference signal based on error comparison (see abstract). It would have been obvious to one ordinarily skilled in the art to employ this system in the use of claimed invention with switching equalizers in order to decrease the error margin of best defined signal path within a period.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042.

The examiner can normally be reached on Mon- Fri, 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jia Lu  
Examiner

  
**CHIEH M. FAN**  
SUPERVISORY PATENT EXAMINER